Application Serial Number 10/695272
Response to Final Office Action dated 05/16/2007

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in this application.

Listing of Claims:

1 – 4. (Canceled)

5. (Withdrawn) A display device comprising:

a simple matrix display provided with a plurality of signal electrodes and a plurality of scanning electrodes which are orthogonal to each other with an electrostatic capacity coupling display unit interposed therebetween;

a scanning side driving portion for sequentially scanning the scanning electrodes and supplying a scanning voltage; and

a signal side driving portion for supplying a pulse width modulation (PWM) PWM signal voltage to be a forward approach PWM signal voltage or a rearward approach PWM signal voltage to each of the signal electrodes synchronously with the scan of the scanning side driving portion,

wherein the signal side driving portion controls the PWM signal voltage in such a manner that the rearward approach PWM signal voltage is applied to the odd-numbered signal electrodes and the forward approach PWM signal voltage is applied to the even-numbered signal electrodes in a rearward/forward approach combination,

and the forward approach PWM signal voltage is applied to the odd-numbered signal electrodes and the rearward approach PWM signal voltage is applied to the even-numbered signal electrodes in a forward/rearward approach combination,

wherein said rearward/forward approach combination and said forward/rearward approach combination are switched at every predetermined frame cycle by a PWM signal controller.

6-7. (Canceled)

8. (Withdrawn) The display device according to claim 5, wherein the signal side driving portion and the scanning side driving portion are configured to synchronize and alternate the PWM signal voltages applied to the signal electrode of the interposed display unit and a scanning voltage applied to the scanning electrode of the interposed display unit to have a predetermined relationship within a frame cycle.

9. (Withdrawn) A display driving method of a simple matrix display for performing a pulse width modulation (PWM) control, the method comprising the steps of:

applying a forward approach PWM signal voltage and a rearward approach PWM signal voltage to signal electrodes; and

sequentially scanning predetermined scanning electrodes such that a number of signal electrodes to which the forward approach PWM signal voltage is applied and a number of signal electrodes to which the rearward approach PWM signal voltage is applied are such that for each scanning period in which scanning electrodes are sequentially scanned, noise voltages generated by rise or fall of the PWM signal voltages cancel each other, and

wherein the PWM signal voltage is applied to have a rearward/forward approach combination in which the rearward approach PWM signal voltage is applied to an odd-numbered signal electrode and the forward approach PWM signal voltage is applied to an even-numbered signal electrode,

and wherein the PWM signal voltage is applied to have a forward/rearward approach combination in which the forward approach PWM signal voltage is applied to the odd-numbered signal electrode and the rearward approach PWM signal voltage is applied to the even-numbered signal electrode, and further

wherein the rearward/forward approach combination and the forward/rearward approach combination are switched at every predetermined frame cycle.

10-11. (Canceled)

12. (Withdrawn) The display driving method according to claim 9, further comprising synchronously alternating each of the PWM signal voltages and a scanning voltage applied to the scanning electrode to have a predetermined relationship within a frame cycle.

13. (Withdrawn) A display device comprising:

a simple matrix display provided with a plurality of signal electrodes and a plurality of scanning electrodes which are orthogonal to each other with an electrostatic capacity coupling display unit interposed therebetween;

a scanning side driving portion for sequentially scanning the scanning electrodes and supplying a scanning voltage; and

a signal side driving portion for supplying a pulse width modulation (PWM) signal voltage to be a forward approach PWM signal voltage or a rearward approach PWM signal voltage to each of the signal electrodes synchronously with the scan of the scanning side driving portion,

wherein the signal side driving portion is configured to apply the forward approach PWM signal voltage to number of signal electrodes and further to apply the rearward approach PWM signal voltage to the residual signal electrodes for each scanning period in which the scanning electrodes are sequentially scanned to alternate between a rearward/forward approach combination and a forward/rearward combination

in which the rearward/forward approach combination is characterized by the rearward approach PWM signal voltage being applied to the residual signal electrodes and the forward approach PWM signal voltage is applied to the even-numbered signal electrodes, and

the forward/rearward approach combination is characterized by the forward approach PWM signal voltage being applied to the odd-numbered signal electrodes electrode and the rearward approach PWM signal voltage is applied to the even-numbered signal electrode.

14. (Canceled)

15. (Withdrawn) A display device, comprising

a single matrix display provided with a plurality of signal electrodes and a plurality of scanning electrodes which are orthogonal to each other with an electrostatic capacity couple display unit interposed therebetween;

a scanning side driving portion for sequentially scanning the scanning electrodes and supplying a scanning voltage; and

a signal side driving portion for supplying a pulse width modulation (PWM) signal voltage to be a forward approach PWM signal voltage or a rearward approach PWM signal voltage to each of the signal electrodes synchronously with the scan of the scanning side driving portion, wherein the signal side driving portion is configured to apply the PWM signal to have a rearward/forward approach combination in which the rearward approach PWM signal voltage is applied to an odd-numbered signal electrode and the forward approach PWM signal voltage is applied to an even-numbered signal electrode or a forward/rearward approach combination in which the forward approach PWM signal voltage is applied to the odd-numbered signal electrode and the rearward approach PWM signal voltage is applied to the even-numbered signal electrode.

16. (Withdrawn) The display device according to claim 15, wherein the signal side driving portion and the scanning side driving portion synchronize and alternate the rearward/forward approach combination with the forward/rearward approach combination to apply the PWM signal voltages and a scanning voltage to be applied to the scanning electrode in a predetermined relationship within a frame cycle.

17. (Previously Presented) A method of providing signals to drive a plurality of pixels arranged in a simple matrix display, the method comprising the steps of:

switching between a rearward/forward combination approach and a forward/rearward combination approach in every frame cycle,

wherein the rearward/forward combination approach comprises applying rearward pulse width modulation (PWM) signals to the pixels corresponding to a plurality of odd-numbered scanning electrodes and applying forward PWM signals to the pixels corresponding to a plurality of even-numbered scanning electrodes, and

the forward/rearward approach comprises applying the forward PWM signals to the pixels corresponding to the odd-numbered scanning electrodes and applying the rearwards PWM signals to the pixels corresponding to the even numbered scanning electrodes.

18. (Previously Presented) The method of providing signals to drive a simple matrix display according to claim 17, further comprising applying and synchronously switching the PWM signals and the scanning voltage to each pixel in a predetermined relationship within the frame cycle.

19. (Previously Presented) A display device comprising:

a simple matrix having a plurality of signal electrodes, a plurality of scanning electrodes and a plurality of pixels corresponding to the intersections between said signal electrodes and said scanning electrodes;

a scanning side driving portion arranged to sequentially supply said scanning electrodes with a scanning voltage signal; and

a signal side driving portion to supply said signal electrodes with rearward approach PWM signals and forward approach PWM signals synchronously with the scanning voltage signal, said signal side driving portion including a PWM signal controller arranged:

to apply the rearward approach PWM signals to said pixels corresponding to odd-numbered scanning electrodes and the forward approach PWM signals to said pixels corresponding to the even-numbered scanning electrodes in a rearward/forward approach combination, and

to apply the forward approach PWM signals to said pixels corresponding to the odd-numbered scanning electrodes and the rearward approach PWM signals to said pixels corresponding to the even-numbered scanning electrodes in a forward/rearward approach combination,

wherein said rearward/forward approach combination and said forward/rearward approach combination are switched every frame cycle by said PWM signal controller.